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REMARKS

The present application was filed on June 2, 2000 with claims 1 through 33. Claims 1 through 33 are presently pending in the above-identified patent application. Claims 1, 13, 20, 25, and 30-33 are proposed to be amended herein.

10 In the Office Action, the Examiner objected to the amendment filed on July 7, 2003, under 35 U.S.C. 132 because it introduces new matter into the disclosure, and objected to claims 1, 13, 20, 25, and 30-33 due to indicated informalities. The Examiner rejected claim 7 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement and rejected claims 1, 13, 20, 25, and 30-33 under 35 U.S.C. §112, second paragraph, as failing to set forth the subject matter which Applicants regard as the invention. The Examiner also rejected claims 1-2, 6-10, 13-14 and 30-31
15 under 35 U.S.C. §103(a) as being unpatentable over Srinivasan et al. (IEEE Transaction on Signal Processing, vol. 46, April, 1998), in view of Smith (ISBN 0-9660176-33, 1997) in view of Tsurushima et al. (United States Patent Application Number 2001/0047256 A1), in view of Johnston (United States Patent Number 5,481,614), rejected claims 5, 11-12, and 17-19 under 35 U.S.C. §103(a) as being unpatentable over Srinivasan et al. in view of Smith in view of Tsurushima et al. in view of Johnston in
20 view of admitted prior art, and rejected claims 3-4, 15-16, 20-29, and 32-33 under 35 U.S.C. §103(a) as being unpatentable over Srinivasan et al. in view of Smith in view of Tsurushima et al. in view of Johnston, and further in view of well known prior art.

Formal Objections

25 The amendment filed on July 7, 2003, was objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. In particular, the Examiner asserts that the following statement is added material:

In the case of an image signal, the adaptive filter is controlled in a way that the magnitude response approximates an inverse of a corresponding visibility threshold, as would be apparent to a person of ordinary skill in the art. (from Substitute Specification, Page 7, lines 23-25.)

30 Applicants note that the cited statement was disclosed in claim 7 of the original disclosure, and thus does not constitute new matter. Applicants also note that standard video and image coding algorithms (e.g., JPEG and MPEG) code an image or a frame of a video signal (or a prediction error from motion compensated temporal prediction) using a two-dimensional transform (most commonly, a Discrete Cosine Transform). For adapting the spectral shape (spatial frequency) of the

5 quantization error to the visibility threshold, a weighting matrix is applied before quantization. *See also*, the method described by Srinivasan and referred to by the examiner. Thus, it would be obvious to a person of ordinary skill in the art to replace the one-dimensional pre-filter applied before the one-dimensional transform in audio coding by a two-dimensional spatial pre-filter before the two-dimensional transform in video coding. Applicants therefore respectfully request that the objection
10 under 35 U.S.C. 132 be withdrawn.

Claims 1, 13, 20, 25, and 30-33 were objected to due to indicated informalities. In particular, the Examiner asserts that the meaning of “masked threshold” is not clear and not descriptive, and asserts that the limitation appears to be – a masking threshold --.

15 Claims 1, 13, 20, 25, and 30-33 have been amended in accordance with the Examiner’s suggestion.

Section 112 Rejections

Claim 7 was rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. In particular, the Examiner asserts that an audio signal processed in one dimension is very different from an image signal processed in two dimensions, including filters,
20 transforms, algorithms, and the related hardware and software, which is not disclosed in the specification and, thus, the Applicants’ specification does not disclose the claimed subject matter in such full, clear, concise, and exact terms as to enable any person skilled in the art to make and/or use the claimed invention, without undue effort.

Claims 1, 13, 20, 25, and 30-33 were rejected under 35 U.S.C. §112, second paragraph,
25 as failing to set forth the subject matter which applicant regards as the invention. In particular, the Examiner asserts that passages cited in the “Field of the Invention” and “Summary of Invention” sections indicate that the invention is different from what is defined in the claims because no audio coding (encoding or decoding) or audio signal is recited in said independent claims.

As noted above, standard video and image coding algorithms (e.g., JPEG and MPEG)
30 code an image or a frame of a video signal (or a prediction error from motion compensated temporal prediction) using a two-dimensional transform (most commonly a Discrete Cosine Transform). For adapting the spectral shape (spatial frequency) of the quantization error to the visibility threshold, a weighting matrix is applied before quantization. This is very similar to the method described by Srinivasan and referred to by the examiner. A person of ordinary skill in the art would therefore

5 recognize that the one-dimensional pre-filter applied before the one-dimensional transform in audio coding could be replaced by a two-dimensional spatial pre-filter before the two-dimensional transform to apply the methods of the present invention to video coding. Thus, Applicants maintain that the specification discloses the claimed subject matter in such full, clear, concise, and exact terms as to enable any person skilled in the art to make and/or use the claimed invention, without undue effort. In addition, since the methods of the present invention can be applied to both audio coding and video coding, it is not necessary to limit the claims to audio encoding/decoding. Applicants therefore respectfully request that the rejections under section 112 be withdrawn.

Independent Claims 1, 13, 20, 25 and 30-33

15 Independent claims 1, 13, and 30-31 were rejected under 35 U.S.C. §103(a) as being unpatentable over Srinivasan et al., in view of Smith in view of Tsurushima et al., in view of Johnston, and claims 20, 25, and 32-33 were rejected under 35 U.S.C. §103(a) as being unpatentable over Srinivasan et al. in view of Smith in view of Tsurushima et al. in view of Johnston, and further in view of well known prior art.

20 Regarding claim 1, the Examiner asserts that Srinivasan et al. teach an adaptive filter producing a filter output signal and having a magnitude response.

Applicants note that, in the method taught by Srinivasan, the spectral and temporal resolutions used for coding can not be selected independent of the adaptive filter, since the same subbands are used for coding and for noise shaping. Independent claims 1, 13, 20, 25 and 30-33 have been amended to require wherein the spectral and temporal resolutions of one or more subbands utilized in said encoding (decoding) are selected *independent* of said adaptive filter. Applicants also note that, in the system taught by Srinivasan, there is no signal corresponding to the pre-filter output and that *only the output* of the overall system has similarly shaped noise.

Thus, Srinivasan et al. do not disclose or suggest wherein the spectral and temporal resolutions of one or more subbands utilized in said encoding (decoding) are selected independent of said adaptive filter, as required by independent claims 1, 13, 20, 25 and 30-33, as amended.

Additional Cited References

Smith was also cited by the Examiner for its disclosure of custom filters...comprising a deconvolution filter having a frequency response which has an inverse response part. Applicants note that Smith does not address the issue of utilizing spectral and temporal resolutions of one or more

5 subbands that are selected independent of an adaptive filter for encoding or decoding.

Thus, Smith does not disclose or suggest wherein the spectral and temporal resolutions of one or more subbands utilized in said encoding (decoding) are selected independent of said adaptive filter, as required by independent claims 1, 13, 20, 25 and 30-33, as amended.

10 Tsurushima was also cited by the Examiner for its disclosure of “a combination of a convolution filter circuit 523, divider 526 for deconvolving the allowable noise level, and subtractor 528 subtracts the masking threshold from the Bark spectrum SB for masking the portions of the spectral components SB lower than the level of the masking spectrum MS.” Applicants note that Tsurushima does not address the issue of utilizing spectral and temporal resolutions of one or more subbands that are selected independent of an adaptive filter for encoding or decoding.

15 Thus, Tsurushima does not disclose or suggest wherein the spectral and temporal resolutions of one or more subbands utilized in said encoding (decoding) are selected independent of said adaptive filter, as required by independent claims 1, 13, 20, 25 and 30-33, as amended.

Johnston was also cited by the Examiner for its disclosure of a method and apparatus for coding audio signals based on a perceptual model. Applicants note that Johnston does not address the issue of utilizing spectral and temporal resolutions of one or more subbands that are selected independent of an adaptive filter for encoding or decoding.

Thus, Johnston does not disclose or suggest wherein the spectral and temporal resolutions of one or more subbands utilized in said encoding (decoding) are selected independent of said adaptive filter, as required by independent claims 1, 13, 20, 25 and 30-33, as amended.

25 Dependent Claims 2-12, 14-19, 21-24 and 26-29

Dependent claims 2, 6-10, and 14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Srinivasan et al., in view of Smith in view of Tsurushima et al., in view of Johnston, claims 5, 11-12, and 17-19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Srinivasan et al. in view of Smith in view of Tsurushima et al. in view of Johnston in view of admitted prior art, and claims 3-4, 15-16, 21-24, and 26-29 were rejected under 35 U.S.C. §103(a) as being unpatentable over Srinivasan et al. in view of Smith in view of Tsurushima et al. in view of Johnston, and further in view of well known prior art.

Claims 2-12, 14-19, 21-24 and 26-29 are dependent on claims 1, 13, 20, and 25, respectively, and are therefore patentably distinguished over Srinivasan et al., Smith, Tsurushima et al.,

5 and Johnston, and admitted and well known prior art, alone or in any combination, because of their dependency from amended independent claims 1, 13, 20, and 25 for the reasons set forth above, as well as other elements these claims add in combination to their base claim.

All of the pending claims, i.e., claims 1 through 33, are in condition for allowance and such favorable action is earnestly solicited.

10 If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

The Examiner's attention to this matter is appreciated.

Respectfully submitted,

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